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TRACING THE SCHOLARLY FOOTPRINTS OF DIGITAL HUMANITIES: A COMPARATIVE STUDY ON CITATIONS AND ALTMETRIC ATTENTION

Sandra M K * **Rupesh Kumar A** * *

Introduction

The computational text analysis of Index Thomisticus in 1946 paved the way for the growth of a new subject area called digital humanities(Smith, 2002).Digital humanities originated from "humanities computing," which deals with the use of computer technology in humanities-related subject areas. DH is considered "the first 'next big thing' in a long time" (William, 2009) underlying its futuristic impact on preserving the knowledge heritage. The evolving nature of DH makes it more complex and increases its potential to transform the knowledge society. Digital humanities is also considered as an emerging research trend in the social science and humanities disciplines, as it is a way of seeking the help of technology for solving humanistic problems. DH offers a wide variety of tools and techniques that will enable humanists to do better data analysis and visualisation. Thus, DH helps the researchers gain more insights into the social problem in their hands. In simpler terms, DH is a technology-enabled path for finding solutions to the social issues. Unlike any other discipline, we can find out the footprints of DH in a wide variety of subjects, including social science, humanities, history, linguistics, psychology, business, etc.(Spinaci et al., 2022).So, this scattering nature makes the task of measuring the scholarly impact of DH an uphill battle.

Altmetric analysis is a research method defined as the construction and study of new alternative metrices based on the social media platforms for measuring and announcing the scholarly impact (Priem et al., 2011). Altmetrics itself is a movement of research towards web. Also it gained more attention as a measure that ensure the quality and publicity of a research work more quickly than any other traditional metrices (Konkiel, 2013).This method captures the impact of a research output by tracing their social media mentions including news, blogs, tweets, facebook posts, Mendeley readership, Pinterest shares etc. Thus, altmetric analysis can be used for solving the uphill battle of tracking the impact of DH scholarly communications. DH being a recent research trend it will take time to gain a good number of citations. At the same time altmetric analysis will help us to understand

* Research Scholar, Department of Library and Information Science, Tumkur University, Tumakuru, Karnataka
* * Assistant Professor, Department of Library and Information Science, Tumkur University,Tumakuru, Karnataka

the research impact through web-based mentions. It works as an accurate way of representing the reach of scholarly communication.

LITERATURE REVIEW

Altmetrics or alternative metrics is a more precise representation of research impact than traditional bibliometrics (Fassoulaki et al., 2020). The movement of altmetrics began in 2010 in order to find a new accurate solution for measuring the research attention. The number of views, reads, tweets, retweets, facebook mentions and shares on different social media platforms are taken into consideration to reach at this alternative solution. Later the invention of Web-based metrics researchers started to make use of this tool to understand the impact of their research among the people. There are a number of altmetric studies in different subject areas. (Kolahi et al., 2017) conducted an altmetric analysis of dental literature in 2015. And found that out of the 14884 dental articles published in 2015, 5153 articles received altmetric attention score. And Mendeley readership, Facebook posts and tweets acts as the main source of altmetric data. Altmetric analysis was also done on different disciplines.Altmeric research later attracted the attention of researchers in comparing the traditional citations with the social media mentions.(Chingath & Babu Hanumanthappa, 2023) analysed the relationship between altmetric attention score and Dimensions database citation received by the library and information science article published in 2020. And they observed that the LIS articles gain more attention from different social media platforms and the social media mentions received by them are higher than that of Dimensions citation.

The social attention received by the scholarly literature is more than that of their traditional citation score, as the citations take more time to acquire a good score (McGillivray & Astell, 2019). At the same time altmetric attention shows a positive impact on citation count (Thelwall et al., 2023). So that altmetric analysis can be used for measuring the research impact of novel research area, as the social media attention can be attracted easily than the scientific reference.

Digital humanities being a novel area of research attracted many research scholars across the globe.(Amanullah, 2023) studied the interdisciplinary nature of DH literature and found that the influence of digital humanities is scattered among different disciplines. And the researcher also underlined the continuous and study growth of DH literature.The intense literature survey on digital humanities indicates that there are enough studies that tracked the impact and growth of DH literature through bibliometric tools and techniques. But still lacks enough studies measuring the social attention through different social media platforms. As a new emerging trend, it is necessary to measure the altmetric attention

received by the DH literature in order to gain insights on societal impact. So, the current study made an attempt to fill this research gap.

METHODOLOGY

Scopus database was used for the study because of its coverage and ease in data retrieval. Scopus as a new citation database challenges the dominating role of web of science with itswide journal coverage (Zhu & Liu, 2020). A total of 3765 documents were retrieved from Scopus database using the query AUTHKEY (digital AND humanities) OR INDEXTERMS (digital AND humanities) on 29 June 2024. No other filtration is used for exporting data from Scopus. Out of these 3765 citations retrieved, 3102 publications with digital object identifier were uploaded to Altmetric Explorer (http://altmetrics.com/) in order to get altmetric details. Altmetric explorer is a web-based metrics used to measure the impact of research through social media platforms (Hassona et al., 2019). 1687 literature were tracked by the Altmetric Explorer. 612 DH literature with altmetric attention score zero was eliminated from the dataset. Then, the remaining 1075 documents were combined with the data retrieved from Scopus database using the VLOOK UP function in Excel. 860 exact matches were found. So, the data for the current study includes 860 publications on digital humanities from 2001 to 2024.

OBJECTIVES

- To analyse the presence on digital humanities research on different social media platforms
- To understand the pattern of obtaining altmetric attention
- To understand the relationship between altmetric attention score with citations
- To know the access type wise distribution of DH literature online
- To gain information about the scholarly communication channels on DH

RESULTS

Citations V/s Altmetric Attention Score

The 860 documents filtered are analysed to understand the relationship between traditional and altmetric citations. Total Dimensions citations (12017) attracted by the 860 publications are more than Scopus citations (11977) and Altmetric attention scores (10995). The publications in 2014 had the highest Dimensions citation (2053) with an altmetric attention score of 1166, and the publications in 2010 had the highest Scopus citation (2080) with an altmetric attention score of 946. The DH literature published in 2022 attracted the highest popularity on different social media platforms, with an altmetric attention score of 1549. At the same time, 2022 had a lower number of Dimensions citations (531), and

Scopus citations (436), compared to the social citations. This contradicts the finding that higher citation is associated with a large social media attention (Kunze et al., 2020). 2019-2022, a considerable good amount of altmetric attention score is obtained by the publications. This may be because of the greater acceptance received by the DH literature in the recent years. The altmetric attention score of 2023(928) and 2024(126) is comparatively higher than their Dimensions and Scopus citation.

Table 1:

Year wise distribution of Altmetric Attention Scoreand Traditional Citation

Year	AA Score	Dimensions Citation	Scopus Citation
2001	1	7	8
2002	1	39	20
2007	17	71	65
2008	1	151	148
2009	27	88	79
2010	946	1955	2080
2011	79	121	140
2012	98	431	509
2013	179	453	495
2014	1166	2053	2028
2015	401	531	552
2016	495	932	911
2017	840	826	807
2018	691	805	812
2019	993	1042	1017
2020	1023	1054	1016
2021	1434	809	750
2022	1549	531	436
2023	928	107	96
2024	126	11	8
Total	**10995**	**12017**	**11977**

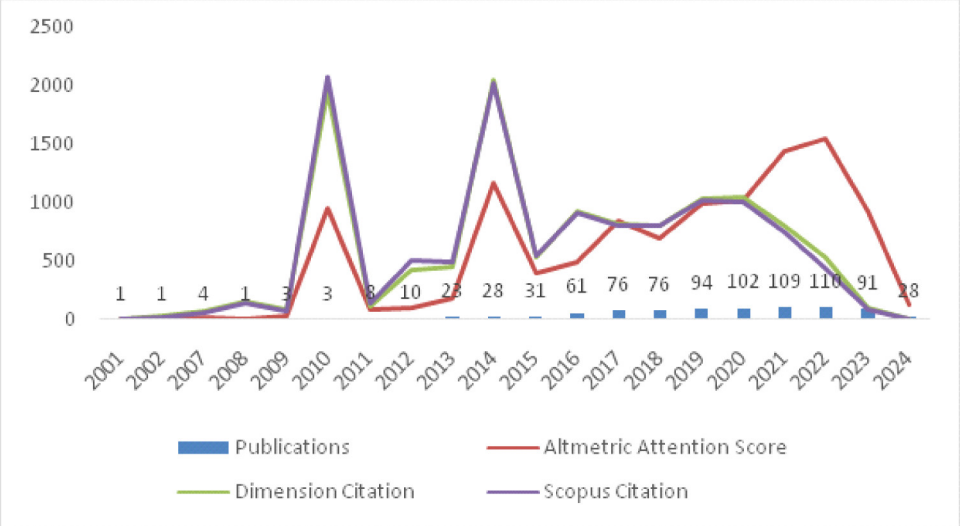

Figure 1: Year wise distribution of Altmetric Citation V/s Traditional Citation

Correlation between Citations and Altmetric attention score

The correlation between citations and altmetric attention score was tested using Spearman's correlation. The Scopus citations shows a moderate positive correlation with altmetric attention score (rho=.265, p-value=.000). The correlation test was executed between the Dimensions citation and altmetric attention score also. And found the citation received from the Dimensions citation also displays a positive correlation with altmetric attention score with rho=.280. And the test is significant in both cases (p-value=.000). This implies a higher altmetric attention is associated with higher number of citations.

Year wise Social Media Mentions

Digital humanities literature started to gain altmetric attention from 2001. Out of the 1687 documents tracked by Altmetric Explorer, 1075 were mentioned at least once on 15 social media platforms. Mendeley readership (36555) and X mentions (11172) gained more popularity for DH literature, followed by blogs (313), News (244), and Wikipedia (189). The highest number of social citations were received in the year 2019, with 7266 mentions on different social media platforms through 94 publications. There is a gradual increase in the number of publications with altmetric citations in DH, but the number of social citations attracted by them displays some disparities. The number of social media citations received from each social media component also varies over the years. The highest news mentions (59) were received in 2022, blog mentions (80) and policy mentions (15) in 2010, X mentions (1908) in 2021, Facebook mentions (50) and Google+ mentions (74) in 2014, Wikipedia mentions (31) in 2017, and Mendeley readership (6011) in 2019.

Table 2: Year wise social media mentions in detail

Year	Publication	News	Blog	Policy	Patent	X	Peer review	Weibo	Facebook	Wikipedia	Googke+	Reddit	F1000	Q&A	Video	Mendeley	Total
2001	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	8	9
2002	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	43	44
2007	4	0	2	0	0	1	0	0	1	2	0	0	0	0	0	184	190
2008	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	189	190
2009	3	0	2	0	0	3	0	0	0	6	0	0	0	0	0	129	140
2010	3	40	80	15	2	278	0	1	4	25	6	6	0	1	0	2574	3032
2011	8	0	6	0	0	53	0	0	2	0	0	0	0	0	0	509	570
2012	10	0	5	5	0	51	0	0	1	2	0	0	0	0	0	800	864
2013	23	0	16	2	0	103	0	0	2	4	1	0	0	0	0	1535	1663
2014	28	22	17	9	1	1187	0	3	50	10	74	1	0	1	2	4123	5500
2015	31	0	16	1	0	483	0	0	17	3	5	2	0	0	0	2026	2553
2016	61	7	7	1	2	507	0	0	14	28	6	1	0	0	1	3187	3761
2017	76	17	28	2	1	771	0	0	20	31	7	1	0	0	2	3235	4115
2018	76	10	31	1	3	662	0	0	8	9	1	2	0	0	0	2555	3282
2019	94	8	26	1	2	1192	0	0	10	14	0	2	0	0	0	6011	7266
2020	102	30	19	5	2	1270	2	0	10	14	0	0	0	0	0	3113	4465
2021	109	20	23	1	1	1908	0	0	11	8	0	2	0	0	0	2984	4958
2022	110	59	19	2	0	1550	0	0	12	14	0	1	0	0	0	2388	4045
2023	91	31	15	0	2	978	1	0	5	19	0	3	1	0	0	840	1895
2024	28	0	1	0	0	172	0	0	3	0	0	3	0	0	0	122	301
Total	**860**	**244**	**313**	**45**	**16**	**11172**	**3**	**4**	**170**	**189**	**100**	**24**	**1**	**2**	**5**	**36555**	**48843**

Access type and Citations

The highest number of DH literature (370) is circulated through closed access channels. But the highest number of altmetric attention scores (3088), Dimensions citations (4090), and Scopus citations (4178) are obtained by green open access publications. Green open access publications have a higher advantage over traditional citations(Young & Brandes, 2020) as well as altmetric attention (Clayson et al., 2021). The access-type wise ranking of altmetric attention score, Dimensions citation, and Scopus citation displays almost a similar pattern. That is, the highest value for all the three citations were received by green, followed by closed access, and the least scoredby bronze access publications.

Table 3: Access type and Citations

Access Type	Publications	AA Score	Dimensions Citation	Scopus Citation
Green	164	3088	4090	4178
Gold	168	2481	3080	2911
Hybrid	114	1618	1067	1065
Bronze	44	1297	723	746
Closed	370	2511	3057	3077
Total	**860**	**10995**	**12017**	**11977**

Closed access publication received higher number of mentions (13492) from different social media platforms. Highest news, blog, policy, patent, peer review mentions were associated with green open access publications. At the same time gold access literature receives highest number of tweets (1410), closed access publications attract more Mendeley readership (13492) and bronze type DH literature attracts the Facebook community(48).

Statistical Analysis

The citation advantage of open acess publications was tested using Mann-Whitney U-test. The mean rank of citation count for open access publications was 469.54 and that of closed access publications is 378.80 (p-value=.000). The results indicate that open access publications receive higher social media mentions than closed access publications.

Table 4: Access type wise social media mentions in detail

Access Type	Publication	News	Blog	Policy	Patent	X	Peer review	Weibo	Facebook	Wikipedia	Google+	Reddit	F1000	Q&A	Video	Mendeley	Total
green	164	103	149	21	9	2110	2	1	18	48	6	6	0	2	0	9192	11667
gold	168	34	64	8	0	3142	1	0	41	49	18	9	1	0	2	8414	11783
hybrid	114	36	26	4	2	1931	0	0	16	29	0	7	0	0	0	3625	5676
bronze	44	24	14	1	0	1410	0	3	48	16	75	2	0	0	3	4629	6225
closed	370	47	60	11	5	2579	0	0	47	47	1	0	0	0	0	10695	13492
Total	**860**	**244**	**313**	**45**	**16**	**11172**	**3**	**4**	**170**	**189**	**100**	**24**	**1**	**2**	**5**	**36555**	**48843**

Document type wise distribution of citations and mentions

Articles have higher altmetric attention score (9994), Dimensions citation (11443) and Scopus citation (11310). The Dimensions citations received by the DH literature in article form is higher than that of altmetric attention score and Scopus citation. But books related to DH receives higher attention from the social media platforms than the citation databases. The average altmetric attention score per article is 12.9 and that of a book is 30.79. Thus, books on DH obtain higher and faster social media attention.

Table 5:

Document type wise distribution of citations and altmetric attention score

Output Type	Publication	AA Score	Dimensions Citation	Scopus Citation
Article	769	9994	11443	11310
Book	24	739	222	295
Chapter	67	262	352	372
Total	**860**	**10995**	**12017**	**11977**

DISCUSSION

In this study, we conducted a comparative analysis of Altmetric Attention Score with Dimensions and Scopus citations in Digital Humanities publications. The study also investigated which measure attracts higher popularity for the DH literature.44.8 percent of the total publications retrieved from Scopus database is mentioned at least once in different social media platforms. And the value of Dimensions citations (12017) received is higher than that of scopus citation (11977) and Altmetric Attention Score (10995). The publications in 2022 received highest recognition(1549) from different social media platforms. And the value of Altmetric Attention Score is much higher than that of Dimensions as well as scopus citation. There is a moderate correlation between the citations and Altmetric Attention Score. This indicates the publication with higher social media attention gain higher citations.The major social media platforms that catalyse the movement of DH on the web are Mendeley (36555), Twitter (11172), and Blogs (313). 74.8 percent of the total social media mentions was attracted by the Mendeley readership.

Further, we discovered that green open access publications gained more Altmetric Attention Score(3088) than any other open access and closed access publications. And the social mention advantage of open access publications was tested with Mann-Whitney U-test.Closed access publications attract more Mendeley readership (10695), gold access publications receive more tweets (3142) and bronze access publication receive highest Facebook posts (48). The document-wise analysis revealed that books get more quicker

social attention than articles and chapters.

CONCLUSION

It may be summarised that digital humanities research is gaining popularity from different sources. As a new area of research, the citation and Altmetric Attention Score patterns show some disparities. But still they are recognized through different social media platforms. And the Altmetric Attention Score shows a moderate positive correlation with the database citations. Hence it will help the DH literature to gain more citations in the future.

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